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DESCRIPTION

of the

C O A S T of I N D I A,

by

John M^cCluer,

R.

1787, & 1788.

Published at the Charge of the East India Company,

by

Dalrymple.

1789.

L O N D O N,

Printed by GEORGE BIGG, 1789.

902

DISCRETE

ATOMIC STATE

WAVEFUNCTION

26.1.8.3.1

26.1.8.3.2

26.1.8.3.3

26.1.8.3.4

26.1.8.3.5

P R E F A C E.

THE following *Survey* was made at the expence of The EAST-INDIA COMPANY, and in consequence of their Orders; these being mentioned in the first paragraph of Lieut. *McCluer's Description*, I shall here insert them; because it must be from the comparison of the execution with the Instructions, that The Publick can form an adequate opinion of Lieut. *McCluer's* merits in the Survey.

“ Letter to BOMBAY, dated 8th *March*, 1786.

Par. 23.

“ As it would be extremely useful for our Ships bound to *Bombay*, in thick weather to have a perfect knowledge of the Soundings on the *Bank* to the *Westward* of *Bombay*, we therefore direct, whenever the Season will admit, you do employ one of our Vessels in executing this Service; we would have the Vessel proceed along the Coast from *Bombay* to *Surat*, determining carefully the Latitude and Longitudes of the various *Points*, as well as of the *Peaks* and *Hills* inland, with explanatory Views of the *Lands*, taking *Altitudes* for determining the *Time* by Chronometer every hour, and taking the *Bearings* and *Altitudes* of the *Lands*, &c. by the Hadley at such Time.

24. “ From *Surat*, we direct the Vessel to cross over to *Goapnat Point*, on the *Coast* of *Guzarat*, and along that

that shoar towards *Wagnagur*, and to cross back from thence towards *St. Johns*, determining the exact Position of the *Outer Extremity* of the *Shoals*. From sight of *St. John's* the Vessel will stand back towards the *Coast of Guzarat*, a little to the Westward of their former Track, and continue their Traverses in that manner, backwards and forwards, between the *Coast of Guzarat* and the *Coast of India*; noting, very particularly, the *Depths* and *Qualities* of the *Ground*, till they reach *Diu Head* by these Traverses, taking Altitudes for determining the Time by Chronometer as often as possible, and always taking at such Times the Bearings and Altitudes of the remarkable *Lands* in sight.

25. " From *Diu Head*, the Vessel ought to continue her Traverses in like manner, to the *outward Edge* of the *Bank* as far *Southward* as 17° N $^{\circ}$ Latitude, till they find no *Soundings* in that Latitude, and then confine her Traverses *Southward* to the *Limits* of the *Bank*, standing back to the *Northward* whenever she *loses Soundings*.

26. " Let what is done, be done compleatly, and nothing left undetermined in this space; if any doubt arises, let them repeat their Observations in such Part, that an implicit confidence may be safely placed in their work when finished.

27. " When this work is finished, we direct that a particular Examination be made of the *Lakadive Islands*, and of the various *Banks*, between them and the *Coast of Malabar*, a knowledge

a knowledge of which would be very useful, and ought to be ascertained by close Traverses, from the *Coast* to the *Islands*, in the same manner as before directed, taking Altitudes for the *Time* by *Chronometer*, as frequently as possible, and where the Vessel cannot anchor during the night, she must make short Tacks, to remain near the same Place, she was in at dark. In the Course of this Voyage, it will be proper to determine the relative Position of the *Lakadivés*, *Malicoy*, (called *Kelay* by mistake in the Charts) and the *Head* of the *Maldivés*.

28. "These Services we hope, may be executed compleatly in the course of one fair Season."

The East-India Company sent for this *Survey*, a *Box*, and *two Pocket, Arnold-Chronometers*; which Lieut. *McCler* says "were of more trouble to him, than of any real use, " being so very irregular in their going, which obliged "him to return them." In justice to Mr. *Arnold*, I must take notice that Mr. *Ringrose* writes to me, in the Voyage from *Bombay* to *Diego-Garcia*, and back to *Bombay*; from 12th August to 29th October 1786 these "three " *Chronometers* were on board" and that the "whole " difference in the Voyage there, and back, was only *two "seconds*" although The *Chronometers* intended for *The Survey*, were sent on this Voyage to *Diego-Garcia*, it appears they had not thereby received any injury; for Lieut. *McCler*, in a letter dated 25th March, 1787, says "The Chronometers all go too fast, viz. Box 20^s; N^o 64 (his own) 8^s; " N^o 425, 36^s; and N^o 419, 35^s ~~per~~ day, without the Variation " of 2^s in 20 days." They were afterwards let run down and not kept going: so that they may have suffered by that circumstance. In a letter of 31st May, 1788, He says " N^o 419 met with an accident by the Chain

“ breaking one day in winding up” and he adds
 “ N° 425 is in possession of The Chief Engineer” without explaining in what state it was: The *Box-Chronometer* had a defect, whereby it often *stopt* in winding up; but Lieut. *M^cCluer*, in a letter of 10th July 1787, says he had “ fallen upon a new method of winding it up, that is, to keep the Key-hand fixt, and to turn the Chronometer round upon the Key, by that means the Ballance Spring is kept in motion;” He adds “ since I have tried that method it never has stopt.” But whether he neglected to take this method at Sea, or whether he there found it ineffectual, does not appear.

I also sent him a Pocket *Arnold-Chronometer*, He says, it went very well, “ He measured with it the breadth of the *Gulph* of *Cambay*, and the Longitude of *Dix Island* from the Coast of India by repeated Observations, which prove the old Charts to be very erroneous.

“ From *Bombay* to *St. John’s* the Coast is laid down from a *Chain of Angles and Bearings*; those by the Compass are taken at fixed Stations. From *St. John’s* to *Surat* the Longitude is determined by one day’s difference of Time, when the Chronometer was going regular, that corresponding with many other Observations. *Broach Point* is determined by the difference of one day’s Observations from *Surat Road*; likewise the distance across the *Gulph* from *Broach Point* to *Goga* is determined as above. From *Bombay* to *Bancoot* the Longitude is measured by the Chronometer, which corresponds with the Compass Bearings of the different Points when in conjunction.

“ Netwithstanding

" Notwithstanding the great utility of the Chronometer in the Work, (where the Tides are so uncertain and changeable in their set and strength) we have often found it disagree 20 to 30^o of time, which could not be accounted for; and it has so happened that we have been in a situation to perceive its error by the bearings and angles of remarkable hills, in such cases we took the latter in preference, as will appear in the Log of 14th March and Those to 17th. April and May it went very regular and did not alter its rate half a second of time in those Months.

" In

" There is great obscurity in what is said in the Log concerning the Chronometer; The 7th March, 1788, + True Time 1^h, 19^m, 37^s 3
17th 1. 24. 43¹₄

Gain in 10 Days 5. 5¹₂ or 305⁵₅

Gain $\frac{1}{10}$ Day 30⁵⁵₅

He says, "on 17th. nearly N and S from where the time was taken on 7th Instant."

On the 7th, he gives the rate of Chronometer for several days, viz.

29 February	33 ^o
1 March	32,5
2 . . .	32
3 . . .	31,5
4 . . .	31
5 . . .	30
6 . . .	30
7 . . .	30
8) 250	31,5 Medium

from hence it appears The Chronometer was going wonderfully regularly; Lieut. M'Cluer seems to have formed unreasonable expectations: if he was not satisfied with this Going?

As he has no Bearings the 13th. there is nothing to infer its rate the 14th: so that I cannot see how any error could have been perceived, had there been an error of 30^o: He does not indeed say an error of 30^o $\frac{1}{10}$ day! but an error of 30^o unless it is in a short interval is no objection to the Chronometer. A

“ In the original Chart is laid down all the different tracks of the Vessel, each course corrected singly for the Tides and leeway, but I perceived it too confused to have the tracks in the fair Copy, therefore have only expressed the Soundings, calculated to near low water.

“ The Latitudes may be depended upon, as the Instruments were in good order, and carefully corrected, for any error in adjustment, after the observations were taken: Declination corrected from the Nautical Almanack.

“ Having only one Assistant (Mr. John Procter) the work became very severe upon us, being obliged both to attend while the Vessel was under sail when in Soundings; and to do him justice he was indefatigable in the business, and deserves the highest commendations for his cheerful assiduity, not only in the rough work, but in the finishing part, which will appear; The writing in most of the *Plans* being copied by him.

“ John M^cCluer.”

I shall only add that the Vessel, in which Lieut. M^cCluer was employed, was too small, for the execution of The Company’s Orders for *Sounding* the *Limits* of the *Bank*; tho’ what Lieut. M^cCluer has described will be of very great use; as the *inner Edge* of the *Bank*, diverging from the Direction of the *Coast*, will shew by the distance run, after passing the *Bank*, on what part of the *Coast* the Navigator is, when the thickness of the weather prevents an *Observation of Latitude*.

High Street, Mary-le-bone, 26th December, 1789.
N^o 52. *Dalrymple.*

A GENERAL DESCRIPTION of the COAST of INDIA,
From an accurate Survey.

October 9th, 1787. RECEIVED the Orders of the Honorable the Governor in Council, to proceed on a Survey ordered by the HONORABLE COURT of DIRECTORS, whose instructions accompanied the above orders.

The Vessel for this Service, having undergone some alterations and repairs, could not possibly be got ready till the 12th; then began the work.

As the strictest injunctions are laid upon the person, who has this Survey to accomplish, I was determined to begin with caution and regularity, doing my endeavour to put its accuracy past a doubt: the work is at full in the Log Book, where any mistakes may be readily traced.

I have begun with the *Island*, and the *Harbour*, of *Bombay*, as if it never had been examined before, taking angles from every extreme eminence, as will appear in the Log.

Bombay Island
and
Harbour.
18° 56' N°

Bombay Flag-Staff, from my best Observations, lyes in Lat. 18° 56' N° the Longitude not yet exactly determined. * The *Island*, by the *Fort*, is near a nautic mile in breadth,

* The Position of *Bombay*, by the Observations of the Honorable Thomas Howe, Lat. 18° 56' 40" North; Long. 72° 38' East; Mean of 2 Obs. 72° 36' and 72° 40' East, but Capt. Huddart's Observations make it 72° 54' East. D

breadth, and $6\frac{1}{2}$ from North to South. The harbour is very commodious and safe, and the soundings are regular, except where the few dangers are, namely, the *Middle Ground*, *Sunken-Rock*, *North end of Tull Shoal*, and the *SW prong* of the *Reef*; near these, the soundings give little or no warning.

*Set of Tides, and Time
of high water.*

The *Tides* are *irregular*, in the *set*, and *time of high water*, at different places in the harbour; within the *middle-ground* it is high water at $11^{\text{h}} 15^{\text{m}}$ and at *Mazagon*, or the upper part of the harbour, 30^{m} sooner; at the *reef* 45^{m} later. Where the *Ships* lye within the *middle-ground*, the *Tide* runs *NbE* and *SbW*; up the harbour it is affected by the draught of *Tannah Channel*; and down it by *Penn river*, and *Caranjar Channel*; here, and off *Tull shoal*, the *Tide* runs nearly *East* and *West*, which circumstance proves of great advantage to *Ships* working out in the *Monsoon*.* Over, on the *reef*, for the first quarter, the *Tide* sets *SWbW*, but when the *rocks* appear, it sets more *Southerly*, or along with the direction of the *reef*; and the *Flood* in the opposite direction.

*Winter and Summer
Tides, with the rise
in moderate springs.*

When the *Sun* is to the *Southward*, or in the *Months* of *December* and *January*, there is a difference of near two feet between the *Day* and *Night-Tides*, on the *Springs*, the *Night-Tides* being the highest; but in the *Months* of *June* and *July*, the contrary is the case, which is convenient for the work at the *docks*, as it is carried on

at

* NB. By the *Monsoon*, at *Bombay*, the *SW Monsoon* is meant; at *Madras* the *NE Monsoon*; so that *Monsoon*, is applied to the *Foul-weather Season*. A

at daylight during the Monsoon weather. On moderate springs there is generally a rise of 16 or 17 feet at the dock gates.

Lighthouse.

The Lighthouse stands near the South extremity of *Old Woman's Island*, now called *Collaba*. It is near three nautic miles from *Bombay Flag-Staff*, bearing from it S $35^{\circ} 30' W$; and S $21^{\circ} E$ from *Malabar Point*. This building is of a circular form, and has within it a winding stair to go up to the top, where the light is, which must be upwards of 150 feet from the horizon at high water, and may be seen in clear weather at 7 leagues distance, or in 20 fathoms water. A regular watch, night and day, is kept here; and it is supported by the vessels which sail to this Port, paying one rupee for every 10 tons burthen.

Dangers off Collaba.

The Point of *Collaba*, on which the Lighthouse stands, is guarded on all sides by an extensive reef of rocks divided into prongs: the first and most dangerous of which is the SW, then the SE, the *Lighthouse Spit*, and *Elephanta Spit*. I think it will be most eligible to treat of them separately.

SW Prong.

The SW Prong lies from the Lighthouse S $40^{\circ} W$, near $2\frac{1}{2}$ nautic miles distant, and is dry at low water near 100 yards from the South end. It decreases gradually from the Island to the SW end of it. A vessel ought never to approach so near this danger, as to have a hard cast upon it, nor come under 7 fathoms, at low water; for

for, from 6 fathoms, the ship may be ashore before the lead can be hove again. In the day time Mr. Nichalfon's mark is a very good one, keeping the *Funnel* hill touching the N° brow of *Great Caranjar*, or that part of the hill E $\frac{1}{2}$ N: If the *Funnel* is not perceptible, do not shut in a white building to the Northward of *Malabar Point*, till the nob, or Western hummock, on *Tull Point*, is on between two paps on the high land of *Tull*, then haul in for the *SE prong*, East or EbN, according to the time of tide.

SE Prong.

This is called the *SE Prong*, but it is more of a round bank than a prong. Here is little or no danger, as a vessel may steer continually by the soundings. In the night, after rounding the *SW Prong*, stand in East or EbN, till the *Lighthouse* bears North, then endeavour to get a hard cast upon the *SE Prong*, which will direct you for the *sunken-rock*. With the *Lighthouse* N $\frac{1}{2}$ W. or NbW, and a hard cast 6 or $6\frac{1}{2}$ fathoms, stand NEbN with a *flood*, and NEbE with an *ebb* tide, which will fetch near the *buoy*, or to the Eastward of the *sunken-rock*, that bearing E 15° S from the *Lighthouse*.

Small

Cross Island, just open to the Eastward of the *Oyster Rock*, is a leading mark to cross the *SE Prong*, for small vessels that wish to go between the *Sunken Rock* and the *Lighthouse*.

Lighthouse spit. Small Vessels that wish to come within the *sunken-rock*, will, by keeping the Island close, have overfalls of 2 and 3 fathoms upon the *Lighthouse-Spit*, which bears nearly ESE from the *Lighthouse*; but if *Mazagon house* is not brought further *in* upon the *town* than the *Admiral's house*, the danger is avoided, and those bearings will lead, clear of all, within the *sunken-rock*, 3 fathoms at low water, soft ground.

Elephanta Spit. When the *Lighthouse* and highest part of the *Elephanta Island* are in one, then off the *Elephanta-Spit*, which bears WSW from the *Lighthouse*. It is not very dangerous, as the soundings upon it decrease gradually; but 6 fathoms is close enough. This Spit is an excellent mark or guide for the *Reef* in the night, coming from the Northward. After passing *Malabar Point* in 7 or $7\frac{1}{2}$ fathoms low water, keep along South or SbE till the *Lighthouse* bears ENE; with these bearings, and a hard cast upon the Spit, 6 or $6\frac{1}{4}$ fathoms, steer out South or SbW to go clear of the SW Prong, which will be done when the *Lighthouse* is NEbN, then haul in as before directed, East or EbN, till the *Lighthouse* is N $\frac{1}{4}$ W or NbW, then stand for the *buoy* of the *Sunken-rock*.

A Guide to round the Reef. To have a hard cast upon the SE Prong (or round) is of the utmost consequence in rounding the *Reef* in the night, because it is a guide for the *Sunken-rock*; and people, by not keeping the *Reef* close, get over on the *foul ground* of *Tull*: here, from mid-channel to either side, across the

C harbour

harbour, there is not a fathom difference, therefore it will be necessary to sound the *round* close, especially with a Westerly wind and flood tide.

Foul ground off Tull.

The *foul-ground* off *Tull*, I may reckon the most dangerous Shoal in the harbour, particularly when the *Nob*, or *Outer Point*, bears SE; with these bearings the Shoal is steep to, from $6\frac{1}{2}$ to 4 fathoms in one cast. I have known a ship's rudder to be unshipped in $6\frac{1}{2}$ fathoms; you ought, therefore, never to stand nearer it than 7 fathoms in the Monsoon; or the West end of *Butcher's Island* touching the low hill at *Trombay*; or *Kennery SbW*.^a These marks are very well in clear weather, but in the Monsoon, the soundings and your own judgment are the only guides: this being the case, the leadsmen ought to be very careful in feeling the ground, whether hard or soft. Ships turning out in the Monsoon fetch near this *point* the first board, and are often obliged to tack before the \leftrightarrow can be stowed: the 2d board will fetch the *Prongs*: the 3d will clear the dangerous part of *Tull*, or bring the *Nob* East, or even *EbS*:^b and the 4th board will clear all the danger of the *Reef*. It is reckoned best not to stand on the last mentioned tack further than to bring the *Lighthouse* NE or *NEbE*, but work at the entrance of the harbour during the Ebb. The Pilot generally takes his leave with *Kennery Island SSE* or *SEbS*, which is clear of the harbour, and all its dangers.

Working out of the Harbour.

After

^a Original *NbW*; an obvious error of the Transcriber for *SbW*. \mathcal{D}

^b There is some obscurity here? \mathcal{D}

To work for an Offing
in the early months
of the Monsoon.

After having cleared the harbour, the grand object is to gain an *offing*, and to avoid anchoring. To accomplish these, attention must be paid to the winds, and time of the season. In the early months, the squalls hang to the Southward of West; in this case, I would keep in with the land during the ebb, for its assistance to get to the Southward all I could. By being well to the Southward of the harbour, the next flood is scarcely felt, and if the wind will admit of a NbW course, good; I would stand off for four hours; then tack: In coming in with the land again the ebb would be made, and probably would admit of standing on, which I should do if I continued the same depth of water, and the next flood would gain a sufficient offing, 30 or 35 fathoms, and still be to the Southward of *Bombay*. In the later months, I would act differently to what I have said above.

To work for an Offing
in the latter months
of the Monsoon.

The latter end of July, and the month of August, the squalls haul well to the Northward of West; I have known Ships at this time stand direct from the harbour with a fair wind. However, as this is not always the case; when clear of the entrance of the harbour, I would stand to the Westward with the ebb, and to the Southward with the flood tide; and, if I could lye any thing to the Westward of South, the flood will have no bad effect. The strong freshes from the rivers, will be more than

equivalent:

equivalent to the swell and leeway: I have often been obliged to stand in SEbS and SE, to keep in the proper depth of water going down the Coast.

Bank to the Southward of Bombay.

To the Southward of *Bombay* is a *Bank* of soundings, which, to those who are not acquainted, is somewhat alarming, especially in working out for an offing. From 30 to lessen to 25 and 24 fathoms, causes them to imagine that they have lost ground, and are drifting in with the land again; when in reality they are going from the shoar. The soundings will be shewn in the Chart of the *Survey*, from one extreme to the other. ^{first meeting} This *Bank* is an excellent guide for ships coming to *Bombay* in the SW Monsoon, therefore I will give a more minute description of its utility.

Of falling in with the Land in the SW Monsoon.

The first caution is, to make a proper allowance for the Currents, which, in the months of May, June, and part of July, set Northward within the extent of soundings on this Coast, and are of great assistance to Vessels working up it before the SW Monsoon commences. Half of July, August and September, owing to the heavy rains which fall in these months, and the great outsets from the *Gulph of Cambay*, and the rivers to the Northward of *Bombay*, the Currents are changed Southward from 20 to 30 miles $\frac{1}{2}$ day, which rate seldom fails; an allowance accordingly may be made. The plan now followed, by most people, is to keep off the Coast, till near the Latitude of *Bombay*; by which means they have a better chance

of

* The Northern Extreme of the *Bank* is not determined with equal precision as the Southern. \mathcal{D}

of obtaining their exact observations, as being in clear weather, (for the squalls and heavy rains on this Coast seldom exceed the *Bank of Soundings*, or above two degrees from the land; and the weather, in a great measure, denotes your approach to the shoar.) After being in the Latitude of the entrance of the harbour, they stand in due East, and having such a great distance to run on that point, the Ship is often some miles to the Northward, or Southward, of the Port, owing to bad steerage and other incidents. If in the early months of the SW Monsoon you make to the Northward of the harbour, it is a dangerous mistake, as the winds hang Southerly when in with the Coast, and the seas run so very high, that it would be a very difficult matter to work to the Southward; but in such a case, advantage must be taken of the tides, keeping in shoar with the ebb, and off with the flood tide: if moderate, \rightarrow . In the months of August and September, it is not so dangerous getting to the Northward of the Port, as the squalls haul more Northerly, and the Current sets strong to the SW, owing to the freshes from the rivers, and *Gulph of Cambay*. To prevent all accidents of this kind, we have lately made a perfect discovery of the *Bank of Soundings* to the Southward of *Bombay*, which will be seen in the Chart, and in my opinion, the most eligible plan for falling in with the land about *Bombay*, is this.

To fall in with the
Bank of Soundings
to the Southward
of *Bombay*.

If you can by any means obtain the Latitude, either by
Mer. Alt. of the Sun, or double altitudes, fore or afternoon,

D or

or by the Stars, within 5, or even 10 miles, of the truth it is of little consequence: stand in for the land without fear, sounding every four hours in the night, till you get soundings: In the day, the Snakes will point out your depth of water, the large ones being in above 45 fathoms and the small ones in, and under that depth. Having obtained the Latitudes nearly, by any of the above methods, stand in for the land, between the Latitude $18^{\circ} 15'$ and $18^{\circ} 30'$ North, till you strike soundings on this *Bank* to the Southward of *Bombay*, from 22 to 26 fathoms *coarse sand and small shells of various colours*. With these soundings stand along the *Bank*, under an easy sail, about North or NNE, noting your soundings each hour, till you get off the *Bank*, and deepen the water to 30 or 32 fathoms, then you are certain of the situation of the ship, and may shape a direct course for the entrance of the harbour.

Depth on the Bank.

It is to be observed, that during the traverses backwards and forwards upon this bank, we never had less than 22 fathoms, as will appear by our Logbook, therefore Mr. *Nichelsen* must have been misinformed by those who said that there is 16 fathoms on it, for I will venture to say there is no such Soundings on this *Bank*, unless it is in a very small spot indeed; nor have I heard any one affirm they got such soundings on it.

For making the land about *Bombay*, there are several *Views* at different situations. Pl. I.

Kennery Island.
 $18^{\circ} 42.30''$ N.

Kennery is a small *Island* lying due South of the *Lighthouse*, and in Latitude, $18^{\circ} 42.30''$ N. It is nearly of a circular

circular form, except a small notch on the NE side, where boats lye, and is the only landing place about it. I take the whole Island to be about 600 yards in circumference: It is surrounded by a bad wall, very irregularly divided by towers, covered at the top with cadjans, (leaves of the coconut tree^a) but no embrasures, nor any thing like a gun mounted. In appearance the *Island* is well inhabited, as the whole is covered with houses. *Ragogee Angeree* has at present the possession of this *Island*, and that of *Coulaba*.^b He behaves very civil to any *English* vessel that goes nigh them. I rounded *Kennery* within a quarter of a mile, and anchored under the SW side of it. They sent me off presents with an invitation to come ashore at *Coulaba*, that being the capital. I readily accepted of the invitation, as it was perfectly to my wishes, which I will mention in its proper place.

The Soundings about *Kennery* are very regular, and on the off side a vessel may go within a quarter of a mile of the shoar in 4 fathoms (half tide). Off where the Boats lye, to the NE of the *Island*, is a *Knowll* dry at half tide; it is about 500 yards from the *Island*, so that there is a good harbour between. From this *Knowll* to *Hennery* I think is all foul ground, as I never saw any boats of size go that way.

Hennery is surrounded with rocks; I could perceive no passage near it, or within it. These *Islands* lye East and West of each other, about $1\frac{1}{4}$ mile asunder. The inner

is

^a *Cadjan*, on the Coast of Choromandel, is the *Leaf* of the *Palmeira* and not of the *Coconut-tree*. *D*

^b Lieut. *M^cCluer* (P. 3.) calls *Old Woman's Island* near *Bombay* by the name of *Collaba*, which is the same he gives to this *Island*, I have therefore for distinction adopted the name given to it in the *French Plan*, I formerly published. *D*

is not so large as the outer *Island*, neither is it so high; but the wall and fortifications seem to be more regular, and better adapted for defence than *Kennery*; nature greatly assisting what is wanting by art. *Hennery* belongs to the *Peshwa of Poonah*, and there are frequent disputes between the commandants of the two *Islands* concerning the plunder taken by their gallivats. *Ragogee*, being an arrant Pirate, will make free with any Vessel he can manage, except the *English*, to whom his friendship, I believe, is through fear. *Angeree's fleet*, He has at present, one Ship, one Snow, three Ketches, and a number of armed gallivats. The topsail Vessels all mounting from ten to fourteen carriage guns; and the gallivats are armed with lances, bows and arrows, each carrying from 80 to 100 men, whose business is to board.

Hennery to Coulaba. From *Hennery* to *Coulaba Island*, the shoar is defended by a line of rocks near a mile from it; It is not safe to stand in, under 6 fathoms, low water, in the night; particularly if there is a doubt how far the ship is to the Northward, as from *Coulaba Island* there is a dangerous *Knowll*, above water at half tide; its true situation will be shewn in the Chart, from the cross angles taken at the different stations. There is a very good channel within it for small vessels, having 3 and 4 fathoms at low water. This *knowll* is nearly in the line of five fathoms low water.

Coulaba Island. *Coulaba Island* lies in Latitude $18^{\circ} 38'. 30''$ North, and $0^{\circ} 2'$ to the Eastward of *Bombay Castle*. *Coulaba*, from

The French Plan makes its Latitude $18^{\circ} 36' N.$ \mathcal{D}

its natural situation, is well adapted for defence, being fenced on the off side, by several points of rocks, and on the inside, by a flat sand bank, which prevents vessels from passing between it and the main, yet the passage from the Southward seems to be free from danger, as I perceived their own vessels go in and out this way; and when not employed, haul close up to the fort.

Treatment there.
1787. 19th Nov.

When we stood in to found near the fort, *Ragoge* sent off to know what we wanted, at the same time begged our acceptance of a few greens, and other trifling presents: and requested our Company on shoar, if we had an opportunity. I saluted him with three guns, and the distance of his returned from the fort, was just 5° of time off. I wished to have gone nearer the fort, but this they would not allow, making many excuses. However, I thought to have founded to the fort, in going ashore in the boat; but even this they prevented by their over kindness.

When at $\frac{1}{2}$ in $3\frac{1}{2}$ mud the Bearings were as follow.

Bearings at $\frac{1}{2}$.

The center of the <i>Fort</i>	N 5° W
<i>Hennery Island</i> , in one with a tower on the South part of the <i>Island</i> ,	N 13. W
<i>Kennery</i> , in one with the reef,	N 38. W
<i>Choul Fort</i>	S 35. E
The <i>Siddees</i> Fort, on the Point,	S 23. E
S° Ext. of the Land	S 8. E
Part of the <i>Knowll</i> , dry,	S 23. W

Off the *Fort* near a mile. According

* The *French Plan* seems to have rendered this of little consequence. *A*

Treatment at Coulaba.

According to my promise went on shoar in the morning with Mr. Proctor, and was attended all the way by one of their boats, which was sent for the purpose; so I had not an opportunity of sounding. When we landed, there was a numerous train to receive us, many of them Purvoes who spoke good English, and, no doubt, carry on a regular correspondence with their friends at *Bombay*. We were shewn to an open booth, near the gate of the fort, and there seated on a carpet till the great man came out. Some time before he made his appearance, his approach was noticed by the clashing of cymbals, and rattling of tom-toms. He came out in great state, attended with 50 or 60 armed men, whose arms were all covered with red cloths: At first I took them for flags that they carried. He received us very kindly, seemed very happy to see his friends, as he called us, and asked a number of questions, which I knew wanted no answers, as he seemed well informed of every thing transacted in *Bombay*. After a discourse of about half an hour upon various subjects, we took our leaves of him, and at parting we were almost suffocated with perfumes, and drowned with rose water. Nor did his civility end here, for he ordered a boat to attend us to the Vessel, with a trey of sweetmeats, which part of the ceremony I could have gladly dispensed with, as it entirely prevented my sounding between the shoar and the vessel.

At low water, I could perceive the Sea wash close up to the wall of the fort, and at high water there must be above 3 fathoms close to the fort wall. There is above 2 fathoms

2 fathoms difference in the tides on springs, as the bank, or bar, that is before the Creek was all dry when I was there, so that rise must be, to admit his vessels to go over.^a The tide flows here, by calculation, nearly North and South, or at 12 o'Clock, full and change. This channel is quite open to the Southerly winds, but from every other quarter it is well sheltered.

The Knowll.

To the SW of *Coulaba Island*, is a very dangerous *knowll*, the center of which is dry at half tide. The channel within it is clear for small vessels, but a stranger ought never to come under 6 fathoms in the day, and 7 in the night.^b

From *Choull* to *Radjapore* the Coast is clear of danger, from 4 or 5 fathoms, within a mile of the shoar, there are several small bays, between these ports, but none of them deep enough to afford any shelter, against a NW or SW wind.

1787. 22d Nov.
The Whale.

Something more than a mile off from *Radjapore* point, is a dangerous *Knowll*, called the *Whale*; I have been very particular in sounding all about it, and over it; At the North end we were in 5½ fathoms *soft ground*, with our boat hook on the rocks *dry*, fending off. The South

^a This, by the *French Plan*, does not appear to be a necessary consequence, for the *dry Bank*, from the *Island* to the *South Point* of the River, would appear to be in the *Mouth* of the *River*, where Lieutenant *McCluer* lay at , but the *Channel*, into the *River*, is on the *North* of the *Island*. 

^b Lieut. *McCluer* breaks off here, and inserts the *Description* of the *Places* to the *Northward* of *Bombay*; and then returns back to this part; however as it seems more distinct to conclude what was observed to the *Southward*, I have transposed his *Description*, and have added the *Dates* in the *Margin*. 

^c Lieut. *McCluer* spells it *Radgapore*, but as the *g* is not *hard* I have altered it. 

South end is not steep to, but shelves away gradually, and is a *shingly* bottom. This *shoal* is near a mile in length, and from 2 to 300 yards broad. From the North end *Gingerah fort* is just open with the *point* of *Radjapore*, bearing NEbE. There is a good channel within it, from 4 to 5 fathoms *soft* ground, 'till you open the river, when you have *sand* all across. It would not be adviseable for a large ship to come under 7 fathoms in the day, and 8 in the night, when supposed to be near this danger.

From *Radjapore Point* to *Comrah Bay*, the Coast lies nearly North and South, and, above 5 fathoms, has a clear bottom.

Comrah Bay.

There is good shelter in *Comrah Bay* against a NW wind, and vessels may ride very safe, in 4 or 5 fathoms, within 500 yards of the shoal. The hills about here are covered with firewood, and the *Marahatta* and *Angria's* fleets supply themselves from this place, with wood and water, merely for their labour. This part of the country belongs to the *Siddee of Radjapore*, but as he has not a sufficient force to oppose them, they do as they think proper with impunity.

This Bay is very wide, as will appear in the Chart; its South end has not so commodious a *bight* for shelter against the Southerly winds. In or near the middle of the Bay, is an *inlet*, which, I perceived from the mast head, spreads itself into different directions through the country; the bar is *dry* at half tide, which makes it only navigable for small boats.

To

Rock.

To the Southward of *Comrah Bay*, is a *rock* close to the shoar. There is no danger, from this Bay to *Bancoot*, above 5 fathoms.

Severdon.

To the Northward of *Bancoot* is a small Bay, called *Severdon*, with an *inlet* at the South corner of it, navigable for boats, only at high water.

Bancoot Bar.

The lower battery in *Bancoot river*, lyes in Lat. $17^{\circ} 57' N.$ and Long. $0^{\circ} 12' E$ of *Bombay Castle*, by Chronometer. The river at this battery is 450 yards in breadth, having 6 fathoms in mid-channel. It has been remarked, that the *point of sand* which runs Southward from *Harrissa hill*, continues stretching more and more every year towards the *South Point*. In 1778, the leading mark over the bar, was, to bring the *Fort* on the *hill* $E \frac{1}{2} N$, and stand in with those bearings, 'till the two *trees* were shut in on *Kelsey Point*: But now the *Fort* must be brought to bear NE, or shut in with the highest part of the hill, when you stand in, over the bar, directly for a hut on the side of the hill. From this hut to the battery is our measured base for the Plan; 1675 yards. The battery to the *Mandavee*, or *Bancoot Village*, is 500 yards.

The least water we had on the bar, mid-channel, was 10 feet, low water; difference of spring tides is 11 feet, so that there is 21 feet on the bar; but the channel is now so very narrow, that it is dangerous to attempt coming in without a Pilot. High water, full and change, at 11 o'clock.

F

By

Survey of the River.

By the last treaty of peace with the *Marabattas*, this river, up as far as *Marr*, was ceded to the *British* arms; but we have never taken, or claimed, farther than *Dasgaum*, which place is the extremity of my Survey; as they seemed alarmed at my operations: Only coming here with the vessel, was the cause of great preparations being made for defence, and additional guards being placed along the banks of the river: This, however, was of very little consequence to me, as I did not wish to lose any time on so trifling an object.

Fort Victoria.
17° 58' N.

Its bad situation.

1787. 4th Dec.

The river.

Upon the South side of the entrance of the river, and on a very high hill, stands the *English Fort*, called *Victoria*, commanded by a Resident, and a Company of Sepoys, besides a number of locals, who live in or near the Fort. *Victoria* seems to be built on a very bad situation, as there is a plain on the hill to the Eastward of it, where 5000 men may be drawn up, and cannon brought within 300 yards of the wall, to play directly into the Fort; and from this eminence every action of the garrison may be seen.

By applying to the Resident, I got a Pilot for the river, and the man proved very intelligent, giving me the names of all the villages as we past them. The plan of the river is only an eye draught, but I will answer for it being as exact, as if measured: When we anchored anywhere, I always ran the measuring line across the river, by the distance known in one part it was easy to guess the

the others. The Latitude of *Dasgaum*, by an artificial horizon, is $18^{\circ} 3' N.$

From *Bancoot* to *Pundaree*, there is water enough for any vessel that can come over the bar; but above that, no vessel can go, without much caution, and it is necessary to have a boat sounding a-head; for the soundings on board the vessel are little, or no guide, to you. In the reach, where the small Island is, in the center of the river, we had from 4 fathoms to a touch on the rocks, but the tide flowing, got safe over; and all above this, the navigation to *Dasgaum* is dangerous and intricate, being a rocky bottom with overfalls of 2, 4, and 5 fathoms at a cast.

The whole of the river, from *Bancoot* to *Dasgaum*, is conveyed between the sides of high hills, almost impenetrable, for the thick brush-wood, which totally covers the mountains. The few Villages which are named in the Plan, do not consist of more than 10 or 12 huts, inhabited by a few miserable creatures, who subsist by cutting the brush-wood for fire, and whose labour for the whole day, barely yields an existence.

Pundaree.

Pundaree is the only respectable Village I saw in the river; It is situated on the side of a hill, and has a creek, which comes up to it from the river near one mile, navigable for large boats; but above the town, the creek is dry at low water. The vallies here are neatly laid

laid out in Batty fields, * which is the only prospect of the kind from *Bancoot* to *Dasgaum*. *VI* & *III* *noted*

I had heard so much of that celebrated place, called *Dasgaum*, that it made me anxious to see it, thinking it would afford me some beautiful landscapes. I therefore went in the *Pattimar*, as the vessel drew too much water to go there with safety; we often found a difficulty, even in the *Pattimar*; though she drew no more than 4 feet: There is a very narrow part in the river, near a village called *Comley*, by which, during our war with the *Marabattas*, they were apprehensive of the *English* passing in order to go to *Marr*: To prevent their progress, they threw a great quantity of large stones into this part of the river, which have rendered it only navigable for small boats at high water. *To slow down*

Dasgaum.
18° 3' N.

When I arrived at this famous Village *Dasgaum*, I went up to the top of a round hill close to the place, from where I had a full prospect of the country. The branch of the river, which turns to the Eastward, had a very pleasing effect to the eye, winding in a regular serpentine curve, between some Batty fields, here and there interspersed with *Mangoe* trees, and on each side, tremendous high hills presented themselves, which admit the rays of the Sun in to their vallies only during 5 or 6 hours of the day. The other branch of the river is scarcely worth mentioning, as it soon disappears, from this view, behind the hills, and trends to the NWestward, Upon the whole,

* Rice-Fields are called *Batty-Fields* on the Malabar Coast, and *Paddy-Fields* at Madras, qu. if the names are not corruptions? *D*

whole, in what I had in sight, there was nothing of note for my pencil; I therefore left the place in disgust, after enquiring for a few vegetables to take with me; the head man of the village assured me, there was nothing of the kind there, except a few Pine-apples belonging to the Resident: To satisfy my curiosity I walked a few miles, and saw neither fruit nor root.

Having finished my Observations in this river, I returned to *Bancoot* with the vessels. We had some remarkable thick fogs and heavy dews while up the river, which altered the rate of the Box Chronometer several seconds slower than usual.

*Survey to the South-
ward.*

While the vessel was getting some trifling repairs, I purposed going down in disguise to *Zyghur*, in our *Pattimar*, as I wished to confine the Southern extent of this season's work to that port. Accordingly, left Mr. *Procter* in charge of the *Experiment* at *Bancoot*, and sailed out of the river with the *Pattimar* fitted for the purpose.

1787.
7th to 10th Dec.

Observations during the trip as 7th Log.

It was my intention to go down as speedily as possible, and traverse up again at my leisure, making the necessary remarks: By so doing, it would prevent any suspicions that might arise among the jealous *Marahattas*.

Zyghur.
17° 20'. 30" N.

Next day, at Noon, was off *Zyghur*, in Lat. 17° 20'. 30" N. Stood directly in for the fort, it bearing SE; keeping the

G

lead

lead going all the way ; Crossed the bar in $2\frac{1}{2}$ fathoms least water, then $\frac{3}{4}$ ebb, and rounded the fort within $\frac{1}{4}$ mile, coming so close at last, that I was obliged to desist from heaving the lead any more, as the people from the forts could see every action on board us. They ordered us to come to, within 150 yards of the walls : when the \rightarrow was up and down, I ordered a mark to be put on the cable, just a wash ; which, when measured, proved we were in 8 fathoms.

After we had brought up, I ordered a gun to be fired as a compliment to them, but the stupid fellows not knowing the reason of it, began to be alarmed, and hailed us to know the cause of a gun being fired, and where we came from, and what we wanted. In answer to these questions, I told them, the gun was a *Salaam*, we were from *Bancoot*, and wished to know if there were any Salt-boats ready to go under our convoy to *Bombay*. These replies were carried to the *Killidar*, who ordered that I should instantly go out of the river, as none of the boats would be allowed to proceed with me ; their own gallivats always giving the necessary protection : I found, however, my pretext answered the purpose pretty well, for during the negociation, I was taking all the bearings of the different points by the Azimuth Compafs, and a view of the fort on the opposite side, called *Vifsey*, from behind the mizen. I pointed out to them that the wind and tide were against us, and begged they would permit me to wait till the latter changed in our favour, they would not allow this request, but out we must

must go, on pain of being fired at: These terms, hard as they may seem, proved just what I found necessary, as I got under way the first quarter of the flood, spring tide, and traversed the bar from side to side, so that I had the soundings very correct; least water *two fathoms* the greatest depth is close to the *fort point*.

Survey of the Bay.

I measured a base by the Log of 2 miles, keeping the boat a-full-sail, and the time measured by the Watch, heaving the Log frequently in the run, which was, From the *Fort* on the *point* bearing South, 'till the *Outer point* bore the same; the base line West: This base being known, gave the whole extent of the bay, from angles taken with the *Hadley* at the North end, and off *Boria Point*.

From *Zyghur* I coasted along the shoar, in some places not above $\frac{1}{4}$ mile off, having a regular clear bottom.

Angenweel.
17° 35' N

Angenweel is the next river Northward; Had an excellent Observation off the point, Lat. 17° 35' N. Went close up to the fort, but had no opportunity of examining farther in, as a number of their gallivats were lying in the bay behind the fort; and I did not wish to receive any insult, nor be the instigation of any dispute; therefore contented myself with taking a set of bearings and angles, and stood close in-shoar to the Northward. I am informed by a native of this place, in the *Pattimar*, that *Angenweel* has a better river than *Zyghur*, being deeper on the bar; but this may be only a vague report, therefore:

therefore not to be depended upon. The land and entrance of this river, are not unlike those of Zyghur, with this difference; the Bay is not half so deep, nor the land quite so high.

Colter.

From *Angenweel* we coasted along Northward 7 or 8 miles, and got off a small village called *Colter*. Here we took a View of the Land, and a set of bearings. There is a very remarkable cut in the land here, and from its curious appearance from the vessel, I was led a-shoar to examine it. It was the fall of a cascade, which had cut a notch in the hill and rocks, like a dock, large enough for a boat to go into. The water that ran down was very sweet and cold. This is a neat little bay, where merchant's boats lye very smooth. The village seems to be in a very pleasant situation. From here to *Severndroog* is 9 miles, and a clear bottom into 5 fathoms.

Severndroog Island.
 $17^{\circ} 47' 40''$ N.

Severndroog Fort stands upon an Island in Latitude $17^{\circ} 47' 40''$ N° chained to the shoar by a line of rocks, which forms a little snug bay for vessels to lye under the South side of it. This is where their Gallivats lye, but I think they can have no shelter against Southerly winds. Besides the *Fort* on the *Island*, there are *three others* contiguous to it, as will appear in the Chart, and *View of the Land* Pl. 2. line 4. but I understand the *Island* commands the *rest*; and the *whole* are subject to the *Poonah Government*.

At

Their fleet.

At these forts, they are a set of arrant pirates. They send 2 large Ketches, with a number of Gallivats to cruize; each Gallivat carrying 80 or 90 men, armed with lances, musquets, and stones. One large carriage-gun is lashed down, in their prows, to the beams with strong ropes, so I suppose when the gun fires, the vessel recoils with it. These fellows often infest our trade: I met them in the due parallel of *Bombay*, and, on the same cruize, they brought in 2 Dingey's, and passed *Bancoot* in triumph while I was there. The next day they sent their respects to the resident at *Bancoot*, acquainting him what had been done, and that they had made their first enquiry about any English letters being on board, and were there any, they should have been happy in forwarding them.

From *Severndroog Island* to *Bancoot river*, the Coast is all clear above 5 fathoms, under that depth, there are a few patches of hard ground, just to the Southward of *Bancoot bar*, having 3 fathoms upon them. In here is the Village *Kelsey*, standing on a small hill, which forms a little projection of the land. At this village are 2 remarkable Brabtrees, which make the mark for *Bancoot bar*. See the directions for going over (P. 17.)

From this point of the land there is a line of rocks which runs, parallel to the Coast, near one mile, and within the reef, the merchant-boats lye very smooth and secure; The entrance is to the Northward.

H

The

Land about Bancoot.

The land about *Bancoot* may be easily known from the offing at a great distance, the interior part forms a flat of considerable length; but at the distance of 6, 7, or 8 leagues, *Harrissa*, at the entrance, is very conspicuous, being a round hill, when to the Southward of it; and it appears a shade darker than the other land.

A gun, fired at *Fort Victoria*, is 5³ of time before the report comes to a vessel lying at the village, yet from the offing, the hill on which the fort is, is not near the height of those inland."

Lieutenant McCluer left Fort Victoria the 11th Dec. 1787, and arrived at Bombay the 20th, he sailed again to the Southward on the 22d; anchored at Bancoot the 27th, sailed again the 2d January 1788: Passed Bombay the 6th, and proceeded to the Northward: The Description of that part is therefore here resumed.

From

To sail from Bombay
to the Northward.

From *Bombay* bound to the Northward 'tis best to leave the harbour within an hour of low water, as you will then get to the Westward of the *reef* by the time the flood makes, which, with the wind a little open, will probably carry you as far as *Mayhim roads* by the return of the ebb.

To ⚡ in Mayhim
roads.

For a Mark to ⚡ in *Mayhim Road*, keep the mouth of the river well open, so as to have *Mayhim fort* in one with the *Baub Mullen*; or for a more distinct mark, a *Church* on the North side of the river, called *Sen^a. de Monte*, ENE in 6 fathoms. I have been in hard ground with this *Church* East, and the *Lighthouse* open with *Mallabar point*; then having 7 fathoms. But with the first mark you may ⚡ in what depth you please, 5 and 6 fathoms soft ground, the same is a leading mark over the Bar.

To ⚡ at the en-
trance of Mayhim
river.

For our small vessels, that wait here for the convoy, there is an excellent anchoring place, between the two points, *Worlee fort* bearing South, in 4 fathoms low water, and quite sheltered from the NW esters by *Wandara point*; at the same time, lying very convenient, to see the convoy out of the river.

To stand over
Mayhim Bar.

To stand over the Bar the above mark will answer; or should that not be distinguishable, keep the *Fort* and *Mayhim Church* in one. The shoalest part of the Bar is, when *Sen^a. de Monte* bears North, 2 and 3 feet at low water, spring tides. Stand on with the above mark, till the ruins of *Wandara Church* comes in one with the little * nob in the back land, bearing about NE, then haul up directly for it; to avoid a *reef of rocks* which lyes off the

fort;

* As in the *View* now inserted upon the *Plan* formerly published. *AD*

To ⚡. *fort*; till the *Church* is well open with the *fort*; then stand in for the *Bunder*, or *Custom-house*, which is between the *Church* and *fort*, 2 and $2\frac{1}{4}$ fathoms low water.

Mayhim Channel

To go to *Bombay* through this Channel, it will be necessary to have a Pilot; the Passage being very dangerous and intricate. From *Mayhim* to *Sion* there are several *reefs* of *rocks* which extend quite across the river, and are dry at low water: Off *Sion* Hill, a *single rock* lies exactly in the center of it, and stops the passage of many boats, notwithstanding all their care and attention; This is partly owing to the eddy, or meeting of the tides: I heard, the Merchants proposed a subscription to blow this rock up; but I suppose it too troublesome a task to undertake with any probability of success: It would be better, I think, to build a Beacon upon it, whose base may have a sufficient diameter to cover the whole of the rock; then should any vessel touch it, she could not receive any damage, but slide round the beacon. This rock is *dry* at half tide; is *sharp* and *ragged*. From this place towards *Bombay* the channel is very narrow, and full of rocks, till you come near *Green Rock*, which is to the Eastward of *Suree Fort*, and which is chained by a reef to the land of the *Neat's tongue*. But coming, or going, through this channel, it is best to keep close to *Green Rock*, as on the *Suree* side is a *large flat* of *mud*, very steep to.

Mayhim to Versovah.

From *Mayhim* to *Versovah*, it is all foul ground under 5 fathoms, and in some places the rocks are above water. A vessel therefore, should never come under 6 fathoms, except on very particular occasions.

Versovah rock.

Versovah Rock, so called from the place, lies in the line of 5 fathoms and is very steep to; I have gone between it

it and the Island, with 4 fathoms near low water, but I would not advise any vessel to attempt the same, the channel being so very narrow. There is a *rock above water*, near mid-channel, between the *rock* and *Island*.

The Island is chained to *Versovah Point* by a line of rocks, dry at half tide. On it there is a small *round tower*, and a few *Brab* trees, but no inhabitants.

Versovah river.
 $19^{\circ} 7' N.$

Versovah Fort lyes in Latitude $19^{\circ} 7' N$, on the Western side of a salt water river, which runs only a few miles up into the Island of *Salfet*. It has no bar, but is well defended by a *point of sand*, almost a mile long, which is dry at half tide, and reaches from the *village* to near the *fort*. At the *tip* of this *sand* the channel is only 150 yards wide: 'Tis requisite to keep close to the Northern shoar, 'till past this *tip*, but not so, when past the *point of sand*, which will be, when abreast the first point from the *Mandavee*, or landing place at the fort.

The Knowll.

There is also a *Knowll* off the entrance of the river, which, in one part, is just a-wash at low water. It lyes nearly South from the center of the Island, and there is $2\frac{1}{2}$ and 3 fathoms between *it* and the *main*. To the Southward, though this *shoal* may in fact *not*^a be joined to the foul ground from *Mayhim*, still I have made it the more conspicuous in the Chart by making it all *one Shoal*.

To clear the *Knowll*.

To avoid this *Shoal* coming from the Southward, you must not stand under 5 fathoms, or bring the *Rock* North 'till

^a In the Original *not* is omitted, the sense necessarily requires it. *D*

'till the entrance of the river is shut in by the *fort*, then bearing NEbE. Stand in, on that course, 'till the land to the Northward is entirely shut in by the *outerpoint* of *rocks*; you may then haul off, and \leftrightarrow in 3 and $3\frac{1}{2}$ fathoms low water, the *Flag staff* bearing from North to NW. The View (Pl. 3. l. 1.) is from this \leftrightarrow ground.

To go up *the river*
as far as *the Village*.

Rise of Tides.

Murvah river.
19° 10' 30" N.

To go into *Versovah*
river.

Should you wish to go into the river, stand in as above, and when off the Fort, keep the *ruins* of a *square^a wall* in one with the center of *Green Hill* (at the top like a saddle) as in the View, till past the first rocky point; then stand direct for the village, keeping the sand close on board. \leftrightarrow off the village in 4, 5, and 6 fathoms. A great fishing trade is carried on here, and the upper part of the river abounds with delicious oysters. The Tides differ here 16 or 18 feet. High water $\frac{1}{4}$ after noon, on full and change.

About three miles to the Northward of *Versovah*, is another salt water River, called by some *Manorah*, but its

^a Log-Book, 2d November, 1787.

" In coming from the *Northward*, round the *Outer-Rock* in 5 fathoms and stand in for the *Point* at the *Fort*, but keep a cables-length off *that Point* to avoid some *Rock*s: When past this *Point* keep close up to the *Northern Shoar* to clear the *tip* of the *Sqnd*, that comes down nearly in a straight line from the *Village* close to the *landing Place* at the *Fort*, when past this 1st from the *Fort* stand along close to the *Sand* and direct for the *Village*, *Baffeen Peak* will be exactly a leading mark to stand for \leftrightarrow , abreast of an *old wall* on the *Northern Shoar*, in 4 or 5 fathoms $\frac{1}{2}$ a mile off. All above the wall there is *shoal water* to the head of the River which runs about 3 miles up from the village. There is a *Rocky Knowll* SW of the *Fort* dist. 1 mile, the *shoaleft* part has not above 2 foot water at low water spring tides."

its proper name is *Murvah*,^a from the Village at the Eastside of the entrance. *Manorab* faces the sea, and is a compact little village,^b with a Roman Catholick Church to it. This river having such a dangerous entrance, and bad ground within, is but little frequented, and that only by boats of an easy draught of water, who trade in dried fish and coco-nuts. The tides are nearly the same as at *Versovah*.

Swamps on Salset.

I am of opinion that *Murvah* river is the chief cause of this side of *Salset* being so very unhealthy; for on Spring Tides this inlet overflows one half of the Island, and brings in with it a great quantity of small fish and spawn, which being left exposed to the Sun, create such a putrid stench all over the swampy ground, that even the air is affected by it; and no doubt but the climates of *Bombay* and *Tannah*, must in a small degree feel the bad consequences of the pest; which, with the frequent inundations, are the cause of this part of the Island being entirely uncultivated and depopulated. For 10 or 12 miles

it

^a Log-Book 24th Oct. 1787. The Boat grounded at $\frac{1}{2}$ tide, about 9 or 10 miles up; The upper part, for 2 miles, being so narrow that they could with difficulty row their oars; from the Hill *Tuljeen*, had very irregular Soundings for 1 or 2 miles, hard ground in several places, and all above that soft muddy bottom."

^b Log-Book 25th Oct. 1787. "The Town is all to the Northward of the Church; and to the Southward of the Church, close to it, are two Wells of excellent Water; directly West from the Church, is a Passage for the fishing Boats, where about 20 or 30 sail out from this Town; there is a Creek from the River, that fills at high-water, about 6 or 7 feet and comes close up to the Village: half a mile to the Northward of the Church is a Corporal's guard, with a Battery and one Gun on it, to prevent the Coolies from molesting the fishing, or Merchant-Boats."

it is all a filthy swamp, but by little trouble, and a very trifling expence, it might be made a beautiful and delightful country, both from its situation and the richness of its soil; besides being the means of encouraging and employing numbers of poor people. The present* Chief of *Tannah* is a great promoter of Agriculture, and I doubt not, but he will endeavour his utmost to remedy the defects of his districts; which will be the means of immortalizing his name.

A remedy.

15.

The remedy for this evil may be as follows: About a mile and a half from the entrance of this river, are 2 hills, the one called *Tuljeen*, the other I could find no name to: However, between those hills is a reef of rocks extending within a few yards across the river, which at this place is not above 200 yards broad. The reef is all dry at low water, and on the Southside of the river there is a great quantity of loose stones: the two hills being so contiguous to the work, that there would be no want of the grand material: After building the wall on the breach of *Bombay*, a work like this could not be thought difficult. I am not a competent judge of the expences attending such a work, but from the situation of the place, and the materials so near it, it can be but very inconsiderable. The outer part of the river would still be of the same use to the trade as it is at present, as no boats go above the hills. On the Eastside of the entrance of this river, there are many Wells, which were dug in the time of the Portuguese: There is excellent water in most of them.

The

* Ganiel Farmer, Esqr.

The Latitude of the Western Point of the river is
 $19^{\circ} 10' 30''$ N. ^a

Manorah to Basseen.

From *Manorah* to *Basseen* is all foul ground under 5 fathoms. The next Village to *Manorah* is *Goriae*:^b There is a *rock* lying about a mile from the shoar, upon which

^a Log-Book, 24th Oct. 1787. "At the extent the people were employed building up Banks to keep it from their Paddy-fields: Took the ☉ Alt. by artificial horizon. Lat. $19^{\circ} 15'$ N."

25th Oct. "in the entrance of the River, off the Village of *Murvah*, from which this River takes its name; AM went a-shoar to search for a *Watering-Place*: we landed abreast of the Vessel, as she lay near the Entrance, directly opposite to a sandy beach, on the W^r. fide; when we landed we walked straight in, to a pleasant regular *Tope* (or *Grove*) and found a *round Well*, built with stone, 20 feet diameter, 139 yards from high-water mark, but this water is not so good as we found in a *Well* 85 yards from it, further on in a direct line: here we made several trips during the day, and found our *watering-bags* very convenient, it took two men to carry one, on an Oar, to the Boat; and six of these bags filled one Water-Cask: On this Point, where we watered at, are a number of those *Wells*, which had been dug by the *Portuguese*; On this Point of *Murvah* are the *Ruins* of an *Old Fort*, and parts of well planed *Stone-Houses* with a number of *Bathing-Houses*, which are now all in *ruins*. The *Well* that has supplied them is well built with *Stone* and *Chunam* (or *Mortar*) and has a line of *Steps* to descend to the *Water*, it is tollerably good, but has very little in it: Observed the Latitude by an artificial horizon, and made $5' 10''$ less than what I made at the other extremity of the River; made here $19^{\circ} 10' 8''$ N. I enquired if they could supply me with Fowls or any other Stock, but was answered in the negative, as all their Stock was monopolized by their Fazzendars."

26th. "Measured the *Entrance* of the *River* from *Point* to *Point* 250 yards."

^b It is so named in the *Chart*, the *Description* and *Log-Book* call it *Goree*: *ADB*, Log-Book, 4th November, 1787.

"*Goriae* is a small village in Lat. $19^{\circ} 13'$ North, there are about 12 or 14 fishing boats that sail out here; there is no anchoring ground within $1\frac{1}{2}$ mile of the shoar all hard ground under 5 fathoms."

which I landed, and on it took a set of bearings. This *Rock* is about $\frac{3}{4}$ of a mile in circumference, and lies in Latitude $19^{\circ} 13' N.$ and is so flat at top, that a wheeled carriage might be drove from one end to the other. There are a few salt water bushes on the East side, close to where we landed in a very smooth spot. This rock must be overflowed at high spring tides, as there was a number of dead shells on the top of it. This I call *Goraie Rock*, from the Village due East of it.

Goraie Rock.
 $19^{\circ} 13' N.$

Ooton.

Ooton Rocks.

To the Northward of this is the Village *Ooton*, * where our *Bombay* Detachment waited for General *Goddard*'s coming from *Surat*, before the siege of *Basseen*. Off this village are several rocks separated in different clusters, one of them much higher than any of the others, and so very sharp and ragged at top, that it was with the greatest difficulty we could walk on it. + On this I took bearings by

* Log, 5th November.

"*Ooton Village* is about half way between *Goraie* and *Deravee Point*. The Passage for Vessels must be between the *Black Rocks* and *Basseen Bar*, keeping nearer the *Bar* than the *Rock*; there is very regular Soundings within the *Rock*, and 3 fathoms is within half a mile of the shoar, but it is a sandy bottom: The *Rock*s that lie off here, are in three Clusters, the highest is in the middle; the fishing boats go between them: we went between them and the *Western Rock*, had 2 fathoms rock least water when on a direct line with each other."

+ Log, 4th November.

"Landed on this *Rock* on the South end, in a narrow gap, just sufficient for the boat to get in clear of the surf, where she lay very smooth. This *Rock* is considerably higher than the one off *Goraie*, so that it can never be overflowed. There is some green bushes on the East side of it. This *Rock* is very ragged and so very sharp that we could with difficulty walk on it."

by Azimuth Compafs. All within these rocks is foul ground, and only navigable for the fishing boats.

Off the entrance of *Basseen River*, the water shoals a great way out, which will be seen in the Chart.

To go over the bar
of *Basseen river*,
and into it.

For going into *Basseen River*, before you come under 5 fathoms, bring the South Steeple of *Basseen* in one with the *first little Peak* to the Southward of the *great One*; or that Steeple by Compafs E $\frac{1}{2}$ S; then stand in for *Puspear Rock* direct, and as you approach it edge away round the Southern side of it, 'till it bears North or NbW, then stand straight over for *Deravee Battery*. If you mean to go to *Basseen*, then keep close to the Northern shoar all the way till abreast the Fort. From abreast of *Basseen Fort* to the opposite side, *Deravee Battery*, is a Bank in the center of the river, nearly dry at low water.

West of *Deravee Battery*, is a Reef of Rocks, extending near the line North and South of *Puspear Rock*; dry at half tide: It does not exactly join to the Point, but is seperated by a Sand Bank.

From *Puspear Rock* to the Main, it is fordable at low water, being united by a hard sand. To the Southward of the rock is a swatch of muddy ground, which divides the Bar into two parts; 1 fathom and $1\frac{1}{4}$ is the least water on the bar, spring tides; the rise is 17 and 18 feet perpendicular: high water full and change 30^m after Noon. Latitude of the *Fort* by several Observations 19° 20' N.

Basseen Fort.
19° 20' N.

To

Between Basseen and Arnoll.

To the NW of *Puspear Rock* is a Range of Rocks, which extend near the line of 5 fathoms. For about 3 miles to the Northward of *Puspear* is all rocky ground, and bad landing. Here is a small creek that assisted us greatly in the landing the troops and stores for the siege of *Basseen*. From this creek to *Arnoll* is sandy ground for one mile from the shoar.

Arnoll Island.
 $19^{\circ} 28' N.$

Arnoll Fort lies in $19^{\circ} 28' N.$ as will appear by several Observations.* It is surrounded by rocks, except on the inside, where the channel to *Angaffee* is. From the South end of the Island to the shoar, there is a Bar nearly dry at low water: I know this for certain, having seen small boats wait at the outside, 'till the tide was sufficient to admit them in. † This fort is above half a mile from the low water mark on the opposite, shoar: The English batteries which breached it, were 1400 yards off; Their perseverance on this occasion, is worthy of being recorded.

Angaffee bay.

Killimayhim.

The Bay of *Angaffee* is full of rocks; several of them above water at half tide; and the *Rock*s from the *Island* extend to *Dantarab Point*, off which there is a reef, dry near one mile from the shoar. The extreme Point of this land is known by a *black high rock*. To the Northward of this Point is the *Greek* of *Killimayhim*, or *Killmemayhim*,

* Mr. Ringrose lays it down in $19^{\circ} 24'$ North. There must have been an error in his instrument.

† Mr. Ringrose leaves this channel open, with 2 fathoms in it, low water.

Killmemayhim, navigable for boats, only at high water; the entrance in is all foul rocky ground. Within the Creek is a small *round Fort*, which is on an *Island*, formed at high water. From this Creek to 10 miles Northward is a *white sandy beach*, defended by a *line of rocks* two miles off the shoar.

Sautputty river.

To the line of 6 fathoms is foul ground; without this rocky ground, there is a little sand for 20 or 30 yards: Along this beach are *three forts*, namely *Danda*, *Mayhim*, and *Seergaum* the Northernmost; To the Northward of this last, is the river *Sautputty*; Its entrance is very intricate and dangerous; the bar is of sharp pointed rocks, and dry at low water: There is a deal of timber exported from this Place: The River divides into a number of branches, which wind through the Country in different directions. Where we lay, there was good \leftrightarrow ground, 4 fathoms low water, one mile from the bar, the *fort* bearing S 65° E, and *Terrapore Peak* S 80° E. This Peak being so much to the Southward of *Terrapore*, ought to have another name.

From *Sautputty* to *Terrapore*, the bottom is foul under 8 fathoms. Here the land to Seaward is low, and planted with Coco-nut trees.

Terrapore Bay.
19° 51' N.

Before you can stand into *Terrapore Bay*, the *Fort* must bear SE $\frac{1}{2}$ E, to avoid the reef which lies to the Northward of the Point. From 9 to 10 fathoms stand

L in

in with the above Bearings to what depth you please. 7 fathoms is without the rocks, and soft ground. The dangers in this Bay, are mostly to be seen at low water. The *Fort* is in Latitude $19^{\circ} 51' N.$ From where we lay in the *Experiment*, the vessels in *Danno River* bore just over the North point of the Bay. As Mr. *Ringrose* made a survey of *Danno River* and its entrance, I did not examine them; but will here insert his directions.

Directions for
Danno river
by Lieut.
John Ringrose.

" Bring *Valentine's Peak* to bear E:S, a large sail's breadth open to the Northward of *Danno Fort*, is the leading mark over the bar into the river.
" When the North * Point of the Bay bears NbE,
" you will then be at the foot of the bar."

Swatch off St. John's.

From off *Danno* in 10 fathoms stood about North, and had a run of soft ground for about 3 or 4 miles, 'till the high land of *St. John* bore East, then had a shingley bottom with shells, but regular soundings. To the Northward of this, fell in with soft ground again, which invited me to take a very particular survey of it, as it might prove a most useful discovery to the benefit of the trading vessels between *Surat* and *Bombay*. This swatch of soft ground is near three miles long, and above two broad, and very easy to be found by the bearings.

Valentine's Peak from S 60° to S 70° E.
Danno Point, or Southern Extreme, from S 5° to S 9° or 10° E.

There

* I suppose he means the Northern extreme of the land.

There is regular Soundings from 9 to 6 fathoms in this
swatch, stiff holding ground, and a sufficient space for
100 sail to \leftrightarrow in with safety, being from nose to stern
within holding ground and land worth five miles long.

St. John's. At present the *Surat* Fleets generally round St. John's, from 15 to 17 fathoms, and are often obligated to come to, in that depth for the tide; Those vessels being furnished with so very light \leftrightarrow and short cables, that they seldom or ever hold fast; whereas, did they round the high land in 10 and 11 fathoms, they might always come, to in this swatch for the tide. There is no danger without the swatch, that I could find. I have stood from it due North for *Surat*, and bore up as I had the gravelly soundings on the bank; which will be shewn in the Chart.

Omergon. To the Northward of the high land, is the *River* and small *Fort* of *Omergon*.* Off this port are many rocks, just a-wash at low water. The entrance is to the Southward. To stand across the outer reef, the *Fort* must bear East.

From the high land of St. John to abreast of *Poneira Hill*, is all foul ground under 10 fathoms, except a spot here and there. Before a vessel \leftrightarrow hereabouts, she should be sure of her ground. The land here trends away to the Eastward and forms a Bay.

Damoan

* *Omergon Fort* East.
May be found several spots of soft ground for anchoring in 10 fathoms.

Of Damoan.
20° 23' N.

Damoan is a place worthy of particular description, therefore I will be a little more circumstantial in the detail; having taken much pains with the observations about it; and the Log will shew, that I have made a perfect survey of the bar, and part of the river: I was the more anxious to get this done, as I found it had escaped Mr. Ringrose; or perhaps he had not the opportunity.

This place belongs to the Portuguese, and is the next to *Goa*, on this side of *India*. The entrance of the river is in Latitude 20° 23' North, and 13' East of *Vauxe's tomb* at *Surat Bar*. The mouth of the river is defended by two forts, one on each side of it, and 157 yards asunder. *St. Je-renomab* is the smallest, and to the Northward. The *main fort* is an irregular pentagon with 10 bastions to it, mounted but very poorly with cannon, though some of them are brass, and of a very large caliber. The inside of the fort is neatly laid out into streets crossing each other at right angles. Very few but those of the military live within the fort; and not many of them; for the utmost frugality is required, to make both officers and soldiers appear decent in their dress; so that a great number of the large houses, built in former times, are now vacant, and going to ruins. The two gates of the main fort bear North and South of each other, distance computed, 500 yards. Within the walls are 7 Churches, besides two in ruins. Their military operations seem to be carried on with ease and regularity; notwithstanding their soldiers are of that degenerated race, called *Topazes*; I have seen the whole drawn up on the parade; the number could not

exceed

exceed 100; the fattest of them would make an excellent scare-crow for a garden. Poor wretches! famine and misery are in their appearance, and cannot possibly be remedied from the small pay allowed them.

The present Governor* is a very good man, and remarkable for his hospitality to strangers, particularly the English. He is, apparently, caressed by the people, which I could perceive from the attention paid to him by every one. The Governor, Custom-Master, and the Commandant of the troops, form the Council upon all public affairs. The salary of the Governor is 4000 Rupees. Rs Annum; and that he should not get too rich, he is relieved from *Goa* every three years.

Bar. From abreast the *forts* to the *outside* of the *bar* is $1\frac{1}{4}$ mile. The bar is very flat, and mostly a very hard sand, except just off the Northern fort, where there is rocky ground a good way out. There is not more than 2 feet water on the bar; low water spring tides; and there is a rise on ordinary tides of 17 feet; so that on common springs there is never less than 3 fathoms at high water.

To go in, over the
Bar.

The most distinguishable mark, to stand in with, is to keep the *flag* of the *Northern fort* E $\frac{1}{2}$ N; or the entrance of the river due East, and stand in direct. + Between the forts are 5, 6, and 7 fathoms high water; which here

* Signior Pereiro.

+ See the *View* of the *land* annexed to the Plan, the *bill*, in the *back land*, in one with the *main Fort*, is a good leading Mark.

here happens $1\frac{1}{2}$ hour sooner than in the offing, there it being high water about $2^{\text{h}}: 45^{\text{m}}$, and in the river at $1^{\text{h}}: 15^{\text{m}}$.

This is an excellent place to lay up small vessels in, for the Monsoon. The river is clear of danger for three miles above the *forts*: Past that distance up is all rocks and sands.

Provisions.

Provisions of all kinds are remarkably cheap here; vegetables are in great plenty; The water is brought to the water side, in jars, by *Gentoo* women; The firewood is also brought to the water side in Carts, one rupee per load.

Damoan is known from the Seaward by two very high steeples, and the hills to the Northward of them, forming *four Knobs* declining to the Southward; and *Enderghur Fort*, on the hill, to the Southward of the river about $2\frac{1}{2}$ miles.

Bulsaur.

From off the entrance of *Bulsaur River*^b is a patch of rocky ground, 1 fathom at low water; which excepted, the Coast is perfectly clear to *Surat*; and you may stand into 3 and 4 fathoms soft ground.

I will leave the description of the other *Rivers** to Mr. *Ringrose*, but must differ with him a little in the

Latitudes,

* So in the Original. \mathcal{A} Lieut. *McCluer* spells it *Bulsaar*. \mathcal{A}

* Since, I have been over the *Bars* of *Gundavee* and *Bulsaur Rivers*, the channel of the former is still the same as in Mr. *Ringrose*'s Directions, viz. keeping

Latitudes, as my Quadrant is an excellent one, and the justness of the Observations may be relied on; having always corrected for error, if any, after the Observations were made; Some instruments will get out of adjustment, during the taking of the Observation; The declination, &c. I have always calculated to the nearest second.

<i>Surat Roads</i> , in 8 fathoms, lyes in Latitude	21° 0' N.
The <i>Tomb</i> on <i>Swallow Point</i> , called <i>Vauxes' Tomb</i> , by an artificial Horizon	21. 4.
The <i>Chief's Garden House</i> , by ditto	21. 11.

To  in *Surat Roads*.

The  ground for large vessels in *Surat Roads*, is
7 and 8 fathoms low water;

<i>Vauxe's Tomb</i>	N $\frac{1}{2}$ E, and
The entrance of <i>False River</i>	EbS & ESE

Here the spring tides are very rapid, running 4 and 5 knots $\frac{1}{2}$ hour. But it is not so much felt by the smaller vessels, which lye further in, about 4 or 5 fathoms, with the tomb N° or N $\frac{1}{4}$ W.

Of blowing weather
in *Surat Roads*.

It is very remarkable, that the blowing weather sets in much sooner at *Surat* than at *Bombay*, and we often have very smart gales of wind in the months of *April* and *May*. It is certainly very dangerous * for vessels of a great

keeping *Mender Tree* ENE, till close over to the Northern shoar. The Town of *Bellamore* is on the South side of the river. The channel at *Bulsaur* is greatly altered: to stand in over the bar, the *Grove* at *Cassambah* must be EbS instead of EbN.

* On the ebb tides there is the greatest danger, having a windward tide: 'Tis not uncommon to roll away the masts.

great draught of water to lye in the roads after the middle of April, as their sole dependance is upon the ground tackling. Small vessels may always escape danger by running over the bar, or if the wind and tide will admit, to run to *Gogo*, where they are sheltered by the Island and Reef off *Peram*. Several vessels, have, by riding at their \leftrightarrow too long, either foundered, or gone ashore, by the wind hauling round to the Westward, when they could not weather *Swallow Point*.

*Appearance of a Gale
coming on.*

In the above mentioned months, the approach of a Gale is known by dark cloudy weather, gloomy and black to the SEastward, with lightning and light variable winds hanging chiefly in the South quarter. With these tokens, it will be best to ride at single \leftrightarrow ; that being obligated to slip or cut, one \leftrightarrow is only lost; and you have another bower ready to bring up occasionally. Top-masts, &c. may be struck, but the fore-yard with the fore-sail bent should be kept up, as also the fore and mizen stay sails, which sail will be sufficient to stand with, either to *Gogo*, or over the bar.

The first of the gale generally sets in from the SE, and hauls round gradually to the SW. When it comes about South, 'tis then time to look out for a place of safety. Most vessels when they \leftrightarrow in the road at this period of the year, have a pilot constantly on board, owing to the many accidents which have happened of late.

From

Running to Gogo. . From *Surat Roads* to *Gogo*, it will be necessary to steer NW with the flood tide, which Course will lead between the *Swallow Bank*, and Head of the *Mallacca Sands*, in 14 and 15 fathoms, shoaling on the Western, and deepening on the Eastern bank. This Course, unless the tide is very strong, will lead upon the *hard ground* off *Peram Island*, which is an excellent guide, as it will answer in the night, as well as the day; in thick hazey weather, as well as clear weather: Stand along this foul ground 'till you get off of it, edging away to the Northward, should the water decrease considerably: Immediately, as you clear the *hard ground* off *Peram*, haul close up for *Gogo*: West will fetch it; but beware of getting to the Northward of it, as there is a Bank, ENE of the Creek, * dry at low water; It is necessary to make an allowance for the difference of the Tides, and remember at what time of the Tide you came to, as the rise and fall here, is from 30 to 33 feet perpendicular. High water nearly the same as at *Surat Roads*, full and change, viz. 4 o'Clock, except when affected by the Northerly or Southerly winds.

Rise of the Tides.

On the East side of the Gulph, the Tide runs NbE and SbW, excepting among the *sands* of *Bogway*, *Swallow*, *Mallacca*, &c. where it sets along the shape of the sand banks, or form of the Channels. On the Western side, the Tide has many directions, which will be shewn by arrows in the Chart.

Measurement of the Gulph of Cambay.

The *Gulph of Cambay* is laid down too great in the breadth by many miles, in all the former Charts; which circumstance

* In the Antient Plan of *Gogo* Road there are *two shoals* marked. D

stance induced me to be very particular in the measurement, which I really could not believe to have been so erroneous, till I proved it, by the Chronometer, crossing four times: The Compafs-bearings of the *hills*, from different stations, coincide with the watch, as will appear by the Log. *

Broach Point is only 5' to the Westward of *Vaux's Tomb*, by Chronometer.

This Point from *Gogo* is 23'. Here I must observe, that I always found a considerable difference between the morning and evening Altitudes, but will abide by the latter, for the Longitude. The cause of this difference I leave to the determination of a more able and experienced person.

The Fleet which sails every Spring for the Western shoar, generally weigh with the first of the Flood, and stand direct over the banks: WNW is a good course for them: With one tide they will often reach the Western shoar, and, with the next ebb, stand along the Coast; so that they seldom, or never, come to, during the trip to *Morwab*.

Malacca Banks.

The head of the *Malacca Banks* should never be approached with an ebbing Tide, it being so steep to, that the soundings give no warning; The tides, too, are so very rapid, that should an unfortunate vessel take the ground here, she would be mast downwards in an instant.

The

* Log-Book, Febr. 1788,
 27th. Lat. O. 21° 15' 14" N. *Settrujab Hill* N 68° 30' W. *Vaux's Tomb*, on Swallow Point. S 41° E
 29th. . . 20. 59. 32 : D° . . . N 54. W. . D° N 51. E

Goapnat Point.

The Shoal off *Goapnat Point*^a is a very dangerous one, especially on the South side of it, where you are from 16 to 2 fathoms in the run of half a mile.^b The Northern and Eastern sides of it are not so dangerous; being warned by a *sand bank*, and the soundings more regular.

Sultanpore River.

To stand in for *Sultanpore River*, keep the two Hills, *Seitrujab* and *Tillijab*, in one, bearing N 60 W, which will lead to the deepest water over the bank, into soft ground, 3 or 2 fathoms at low water.

To the Northward of *Sultanpore* is a very dangerous *knowll*, at low water, even with the water's edge; It is steep to,^c and has within it 5 and 6 fathoms; Its extent, is near one mile long, and half a mile broad.

Western side of the Gulph.

From the entrance of *Sultanpore River*, even up to *Gogo*, you are presented with a most dismal, inhospitable Coast, fenced along with rocks, which, in some places, lye a little way from the shoar; I could not see a place fit for a boat to land at, even at high water, on the whole Coast, of which we were frequently within $\frac{1}{4}$ mile. The land has a brown, barren, appearance, except at the village *Allong*, where are a few trees, partly hid in a valley;

There

^a Log-Book, 16th February, 1788.

" *Goapnat Point*, so called by the *Gentoos*, on consideration of a famous *Place of Worship* that is built there, dedicated to their *God Goapnat*: This *Building* is said to be of *mud*, but shews an appearance of a *Fortification* with a *very big Flag-Staff* to it, and the *Priests*, or *Joaquees*, that attend this *Place*, keep a *Flag* constantly flying: It has a few thick *bushy trees* about it, formed into a neat regular *Grove*: This *Point* may be seen 5 or 6 leagues off, in clear weather, but not farther: The *Land*, from this *Point* to *Sultanpore Inlet*, is *low*, with a few *bushes* interspersed, as in the *View*. (Pl. 7. 1. 6.)"

^b Log-Book. " and, in some places, 5 and 6 fathoms in a cast, it has such a *sudden overfall*."

^c Log-Book, 18th Febr. 1788. " Having 17 fathoms within a mile of it."

There is no appearance of any cultivation about their lands, still we could perceive multitudes of *cattle*, on the interior hills. This Coast must abound in cattle, for the *Gentoo*, or *Hindoo's*, persuasion flourishes here.

Peram Island.

To the Southward of *Peram*, there is very good \leftrightarrow ground *within* the *reef*, but this Island is not much frequented, being out of the way of the trading vessels, and it is very seldom that shelter is wanted here, for the Northerly winds are never violent, and the swell from that quarter do not rise to any height; To be caught there, with a Southerly wind, would be somewhat dangerous, therefore we may call this \leftrightarrow ground of little use.

Peram Island.

Channel between It
and the Main.

Peram Island is above a mile in length, and half a mile in breadth. It is surrounded with rocks a great way from the shoar, many of them dry at low water, and is about $2\frac{1}{2}$ miles from the shoar (measured by sound.) I had often heard of there being a channel between the Island and the Main, and, the wind and tide favouring me, I attempted to go through it; In standing over for mid-channel, had an overfall from $4\frac{1}{2}$ fathoms, to 2 rocks; then instantly 9, and then no ground 40 fathoms, as fast as the deep-sea-lead could be prepared: In this part of the channel we could perceive, by the pattimar at \leftrightarrow , and the land, that we were drove at the rate of ten knots \leftrightarrow hour, at least; having a pleasant Northerly wind, we shot across the stream of this rapid current, and got near the Island; there we were fixed in an eddy for near a quarter of an hour, although we had a fresh breeze: We were at last necessitated to sheer across towards the mid-channel again, keeping her head to the tide, which brought us clear of the Island. In this dreadful channel, the vessel was so agitated and shaken by

by the rapidity of the tide, that it was very alarming to every one a-board: had she then taken the ground, I am firmly of opinion, not a soul could have been saved, and I would advise people not to attempt this passage, unless they were upon life and death: I am informed the channel is not more than about 20 yards wide: The tides, both ebb and flood, set strong for this channel, and a vessel that leaves *Gogo* with a light breeze and ebb tide, will with difficulty clear the Island *Peram* and its dangers; The Island lies in Latitude 21° N. ^a Near the center of the Island are the ruins of an *old fort*, or *Gentoo pagoda*; I am informed there is good water on it: This place is an excellent receptacle for the plunder of those Pirates who infest the trade.

Gogo.
21° 41' N.

Inhabitants.

Gogo is a town 7 miles to the NW of this Island, in Latitude 21° 41' N. Longitude 0° 28' West of *Vauxe's Tomb*, on *Swallow Point*, by Chronometer. This town is chiefly inhabited by *Lascars*, whose number is computed to be about 2000, (men fit for sea) when all present, which seldom, or never, is the case: Those people, when on board of English vessels, are the most active, and best seamen we have in India: They are likewise possessed with a spirit of bravery, scarce to be equalled in any of the other tribes of Natives; and will, when practised, exercise a great gun, some time equal to an European: When they are at their homes, they parade about in their best apparel, and a sword, and will scorn to do any work, 'till they have spent all the money of the last voyage; When that is gone, they chearfully return to sea, leaving

part

^a So in the Original, but, by the subsequent Latitude of *Gogo*, obviously a mistake. His Chart makes *Peram* in 21° 35' N. In the Log-Book 20th Febr. 1788, Lat. O. 21° 38' 31' N. *Peram Island* $\frac{1}{4}$ mile dist. S. 22° E to S 59° E. *D*

part of their impreſs * behind them, for the use of their relations. It is remarked that these people ſeldom, or never, quarrel among themſelves; They are exceeding quiet on board, and very obedient to their commanding officers; They never drink liquors, but will, at times, intoxicate themſelves with Bang and Ophium, the latter they ſmoak in Tobacco; the former is ground ſmall, and then strained through a cloth, and drank with water: They have a great ſenſe of honour and reputation: Thieving is ſeldom known among them; and if one of their wives, or ſisters, goes aſtray, ſhe brings ruin on the whole family: They are ſtrict followers of Mahomed, and pray 5 times a day when on ſhoar, but not once a year on board, unleſs he is a head man, and has but little to do.

The market.

The houses in *Gogo* are moſtly buiſt of a sandy ſtone: where they were brought from, I could not learn: At preſent when a perſon wants to buiſt, he previously buiſt 3 or 4 old houses, on purpoſe to have the ſtones for his house: Moſt of their houses are of the ſecond ſtory, but very close and badly planned for a hot climate; They are moſtly tyled, and ſhew a very pleafant proſpect from the road, where the ſmall veſſels ly, as will appear by the *View* (Pl. 8. 1. 6.).† Their market is but very poorly ſupplied; vegeſables are ſcarce, although there are a number

* It is cuſtomary in India, when ſeamen are hired, to pay them two to four months pay in advanſe: They are then bound for the ſeaſon, or the Voyage. The Sarang is generally the bondsman to the Commander for all his people.

Food of the Inhabitants. number of Banyans, who exist on nothing else. Fish is not to be had at any rate, except a few Mud-Worms, which they call *Newtee*. Mutton is seldom killed, because no one can afford to purchase it, but on the great feast days. Beef is never killed for the former reasons, and to oblige the Bramins and Hindoos who reside as merchants. In short their chief support is a very small grain, called *badgeree*, ground into flour, which they bake into cakes, and eat with the little mud-fish : Yet they are a healthy well featured people.

Water. They are badly off for fresh water; all about the town being brackish, as that, and a great way inland, is overflowed every high *springs*. They are therefore obliged to bring the water for drinking, the distance of 4 or 5 miles, in skins upon bullocks.

Wood. Firewood is likewise very scarce, being all brought from other parts inland, and from the different creeks in the Gulph. Fowls are good, and tolerably cheap; Them, eggs, butter, and milk, are all an European can get eatable.

Gogo Bank. There is a bank to the NE of *Gogo*, dry at low water. This excepted, the Gulph is clear of danger across to *Broach Point*.*

Thus far have I described the *Gulph of Cambay*, and its dangers; to *Gogo* on one side, and to *Broach Point* on the other, being the Northern extent of my Survey. To the Northward of this, requires an experienced Pilot, as the

* In the ancient Plan of *Gogo*, there are two *Shoals*. *D*

lands shift annually. I shall now go along the Western shoar.

Goapnat Point
to Mowah.

From *Goapnat Point* to *Mowah* is 20 miles; the Coast quite clear one mile from the shoar, in 10 fathoms, but here the Soundings are no guide with respect to the distance from the land, as the depth is nearly the same from one mile to four leagues off.

To the Westward of *Goapnat Point* there is a high Fort on a hill called *Jaunmair*.

Wagneghur Creek.
21° 3' N.

Wagneghur Creek is the first inlet, West of the Point; It is difficult to be known from the Offing, the entrance being so very narrow: At low water the bar is entirely dry: It is defended by a point of high rocks, just a-wash at high water, and the channel in, is not above 10 yards wide: a few yards from the entrance, the Creek turns short to the NE, so that vessels lying any way in, are not perceived from the offing: I did not examine above one mile from the entrance, as I found this Creek only navigable for small vessels.* Half a mile off, Lat. Obs.

21° 3' N.

The Bay to the Westward of *Wagneghur* is clear of danger, but the shoal water runs a great way from the shoar, so that a vessel of any considerable draught, can

* This Place formerly was a nest for pirates, but now the *Rajah* of *Bouneghur*, having possession of all this Country, has routed them out.

Cutpore bay.

have no shelter here from the Westerly winds. The Creek in the West end of this Bay, is called *Cutpore*; Off this Creek, the Point runs out a little from the Coast, and off it, is a *reef of rocks*, dry at half ebb, half a mile from the shoar. Near the middle of this Bay is a remarkable *Gentoo Pagoda*.

Mowahr.

Round the Point of *Cutpore*, are *Mowah Bay*² and *Creek*, nearly as bad as that of *Wagneghur*, for the boats lye all aground at low water; In the roads it is very bad riding, the bottom being all sandy from 7 to 10 fathoms, and with a flood tide, you lye with the rocks off *Cutpore*, right astern. The *View* (Pl. 7. l. 5.) will shew the land hereabout, which is no where higher than *Mallabar Point* on *Bombay Island*.

Mowah to
Searbett Island.

From *Mowah Point* to *Searbett Island*, is 16 miles. There are some detached *rocks* above water, about $\frac{1}{2}$ or $\frac{3}{4}$ mile from the Coast, and about half way is a *black rock*, apparently separated from the main, but it is not the case. The Coast here is of a straight line, as in the Chart.

Searbett Island.
20° 55'. 30" N

Searbett being the only Island on this Coast, except *Diu*, I was the more particular about it, which will appear by the Plan on a large scale: It affords shelter for vessels against both winds, and I am convinced, ships might ride out the SW Monsoon here, by keeping well

² Log-Book, 11th April, 1788. "When we arrived at the entrance of *Mowah Creek*, the *Bar* was almost *dry*, which is the case *always* at *low water*, as the Pilot informs me, on *Spring-Tides*; and that the *entrance* is so very *narrow*, that it is only *navigable* for *Merchant-boats* of an *inferior* size: The *Road* without, is all *sandy ground*, and rendered dangerous by a *Reef of Rocks* from the *Point* to the *Entrance* of the *Creek*: The *Land* about *Mowah* and the *entrance* is very *low*, excepting the *steep sandy cliffs* on each *side* of the *Creek*."

to the Eastward, so as the Island might nearly shut in the opening of the West Channel: Round the West end of the Island is the only way in, for a large vessel: At the East end is all shoal water, as will appear in the Plan. Yet there is an excellent \leftrightarrow place, from 4 to 10 fathoms soft ground, under the Northside of the rock, where a vessel is sheltered against the Westerly winds.

Searbett Island.
20° 55'. 30' N.

Inhabitants.

Water.

An excellent Harbour
for the Coolies.

Sally Pier.

The center of this Island lies in Lat. 20° 55'. 30" N° and 1° 8' W of *Vauxe's Tomb*; its form is of an irregular triangle: The village is on the North side of it, consisting of 30 or 40 miserable huts, the walls of which are stones, and the roofs thatched with badgeree straw. I take the inhabitants to be in number about 200, including women and children. The most part of the Island is laid out in fields for badgeree grain, the rearing of which is the chief employment of the people: ^a They have several wells of excellent water, which seem to have been the work of the *Portuguese*, as the wells are regularly built of cut stones: The ruins of some old walls, of good masonry, are still to be seen here. ^b

This Island is the receptacle of all the robbers on the Coast, and here they are supplied with grain and water, being always ready to put out to sea, whenever they find it feasible: These pirates always give a part of every thing they steal, as a tribute to the Island, and the colours of all the vessels taken, are put up, over the tomb of a Mahometan Saint, called *Sally Pier*, who was interred on the East neck of the Island. He has also some relation

on

^a Log-Book, 6th April, 1788. "Their chief subsistence is this *Grain* made into bread, and fish when they catch them."

^b Log-Book, 6th April, 1788. "Here are several pieces of old walls, which appear like the *ruins* of a *fortification*; also a great quantity of loose stones, of which the People have made walls round their grounds."

on the *rock*, who is allowed a few of the flags; and there are two men appointed to keep a regular watch over them.

The people of the Island at first seemed much afraid of us, imagining we were come with hostile intentions, but our reconciliation soon took place, by making them some trifling presents: They afterwards were very friendly, and offered us all the assistance in their power.^a

Religion.

Animals.

The Island is subject to the *Siddee* of *Radjapore*, and pays him a small acknowledgement annually: They are all Pagans, and of the Gentoo persuasion, but they pay that respect to the *Mahometan Pier*, merely out of compliment to the *Siddee*, the Lord of the Manor. There are very few animals on the Island, those that I saw were 2 Buffaloes, 4 or 5 Cows, 10 or 12 Goats, 1 Dog, and 1 Cock; to which stock I added 2 Pigs, male and female, another Cock and 2 Hens. They seemed very fond of the Pigs, and promised faithfully to take care of them.

Chanch River.

Opposite to this Island is the *river Chanch*, which takes its name from a village $2\frac{1}{4}$ miles to the Eastward of it.

^a Log-Book, 5th April, 1788. "AM landed on the *Island*, with the detachment under arms, and marched to the *Village*; made a present to the *Patell* of a bag of rice, some doll, sugar-candy, two bottles of arrack, two pigs, male and female, one cock and two hens; and told him our business there: He seemed at first much alarmed, but our friendly style of talking to him, reconciled him to us, and he offered *water*, and any other assistance in his power.

"6th PM The *Patell* of the *Village*, with a few of his Relations, came on board to see the *Vessel*: returned with them on *shoar*, and walked over the most part of the *Island*; It is divided, at high water, in two, by a ragged *neck* of *Rocks*, which is difficult to cross, even at low water."

it. This river is secured by a Bar, as in the Plan: Within that, is all muddy ground to where the Plan extends: I am informed that this river goes a great way up the Country, but it is too shallow for navigation: The tide here does not run very strong, which proves favourable to the produce of most delicious Oysters: To the distance we went up, there was no appearance of inhabitants, or any living thing, within the reach of the eye, excepting a few birds.

Jaffrabat.

Jaffrabat is about 6 miles to the Westward of this Island, and has the best river of any on this Coast, owing to its easy entrance: it is shallow, 'tis true, but vessels will receive no damage by lying in the soft mud, at low water, as they are so well sheltered against all winds. This place belongs to the *Siddee* of *Radjapore*, and how he came by a settlement on the *Guzurat* Coast, I cannot tell: He is at war with the *Singarians* and *Arabs*, and has several armed *dingees* on the cruize, during the fair season.

Trade.

Next to *Diu* this is the greatest place for trade on the Coast of *Guzarat*. The town is defended by a wall all round, but it has not many guns mounted.

The Governor of the *town* behaved remarkably civil to me, which I understand he does to all the English.

The largest Oysters in the world, I believe are in this river; They are above twice the size of the English Oysters. For a more perfect idea of the place, see the *Plan* and *Views*.

From.

Jaffrabat; Westward.

From *Jaffrabat* Westward, the situation of a vessel on this Coast may be known by the bearings of a *very high hill*, inland, called, by the *Moormen*, *Junaghur*. I set this hill, when in conjunction with most of the remarkable Points, &c. as will appear in the Log of the 1st *April*.

Radjapore.

From *Jaffrabat* to *Radjapore* the distance is 13 miles; The Coast is all clear within $\frac{1}{2}$ mile of it: 8, 9 and 10 fathoms: There is a *small fort* upon a Point greatly elevated; They generally fire at any vessel that comes within the reach of their shot: Round this Point is a small creek, where their *Gallivats*, or Cooley boats, lye. They are arrant thieves from this place, and pay no respect to any colours, taking all by whom they gain any advantage; But their cowardly disposition is much against their profession, for the flash of an old musquet, and a red jacket or two, will intimidate them.

The Coolies.

About three miles of this is *Simur Fort*, belonging to the *Portuguese*, and a place of little note.

Nowabunder.

When *Junaghur Hill* bears N 9° E, it is in one with the Point of *Nowabunder*, another nest of robbers. This Point is about $5\frac{1}{2}$ miles East of *Diu*, to which it being so near, the thieves are nearly on the same terms with the *Portuguese*, as *Angria* is with the *English*; passing all boats under *Portuguese* Pass and Colours; but those of any other nation are seldom spared, if the pirates get the upper hand: They have a small creek into which their vessels are hauled; I counted 12 lying ready for sea, besides twice the number of prizes.

Coolies.

Q

Diu

Diu Island.

Diu is the next place, and deserves a very particular description, as its situation &c. are very erroneously laid down in most of the Charts. The Castle is $1^{\circ} 37' W$ of Surat roads, the Tomb $N \frac{1}{2} E$. This distance was measured twice, backwards and forwards, by a Chronometer; and the old Charts place Diu $2^{\circ} 24' W$ from the Tomb: There is near 20 miles of this difference in the breadth of the Gulph.

Diu Castle.
Lat. $20^{\circ} 43' N.$

Fortifications.

The land from Diu Head to Jigat must run more Westward, than is laid down in the old Charts, for by the Log of 30th April, when within $\frac{1}{4}$ mile of Diu Head, the Western extreme bore $N 65^{\circ} W$, whereas the old Charts have it nearly NW. Diu Castle lyes in Lat. $20^{\circ} 43' N$, and Longitude $1^{\circ} 37' W$ of Vauxe's Tomb. The Castle stands on the East point of the Island, as in the View. It is well fortified, both by art and nature, having upwards of 100 pieces of cannon mounted, many of which are brass: From the Castle, there is a wall which surrounds the whole town, and is divided into half moon towers at equal distances. There are only two gates, one of the sea, the other of the land, and both are shut at Sun-set.

Town and Streets.

The houses within the walls are all built of a free sand stone, and many of them are 4 or 5 stories high, inhabited by Banyans; Their streets are so narrow, that one cart must pass another at particular places, which makes it very unhealthy for the Europeans; notwithstanding the great care the Governor takes in having the

Water. the place kept clean, for which purpose above 50 people are constantly employed. Most of the water on this Island is brackish; That which is for use, is kept in large reservoirs, and will last the garrison and shipping from season to season; it is all rain water, and conveyed to the Wharf in a channel, and delivered by a cock into the boats.

Dimensions of the Island, soil, and produce.

Quarries and Mines.

The *Island* is about $6\frac{1}{2}$ miles from the East to West, and $1\frac{1}{2}$ from North to South; The ground is hard and rocky near the town, and towards the sea; the inside of the Island is a white sand; so that I could not see any soil fit for cultivation, yet the market is well supplied with vegetables, which come from the Main: Mutton, Fish, and Fowls are in great plenty; the latter are dearer here than at *Damoan*, but cheaper than at any of the *English Ports*. Beef they are obliged to procure in a clandestine manner, and kill it within the *Castle*, on account of the principal merchants being *Banyans*, whose friendship is of the first consequence to the place, as the revenues of the Custom-house, are the only support of the garrison. Their ideas of defence may be very good against those, who they may be apprehensive of; but I think an European nation wwould find a great use, in what they deem the deselice of the town and castle; which is this; about 2 or 300 yards from the *Castle-wall*, is a *hill*, on a level with many of their guns; This hill is all undermined, and most of their houses are built with the stones from the Quarries; it is cut at the top into large square holes, in which, say they, should an enemy come, they would fall; A very improbable

probable story, that an enemy would go on the top of a hill, when they have such excellent barracks below, speaking within compass, for 10,000 men. However, I think they are perfectly safe; for, I imagine, no *European* nation will ever trouble that Island.

The water is so deep on the East side of the *Castle*, that a 74 gun-ship might lye within 5 or 600 yards of the wall, so that she does not come too near the *Rock above water*, which joins to a line of rocks from the *fort*. See the *Plan*.

Harbour and
Entrance into
the channel.

From this *Rock above water*, there is a *bank* to the Eastward, *breakers* upon it at low water, but between is a good channel of 4 or 5 fathoms. From the East end of the *bank*, there are *two Date-trees*, standing close together on the shoar, in one with *Junagbur hill*. See the *Plan*. Within this *bank* and *rock*, you have the best anchoring ground, from 5 to 3 fathoms, sand and mud. Most of the small vessels go into the channel, and lye off the *Custom-house*, as in the *View*, but the passage in, is very narrow and intricate. See the *Plan*. It is high water here, full and change at 1^h. and the tide rises 9 or 10 feet on springs.

Channel.

The *Channel*, between the *Island* and the *Main*, is only navigable at half-tide for fishing boats. I went in the boat, and sounded the Western entrance, where I found only 4 or 5 feet, at low water, on the bar. This entrance is

is defended by a neat *square fort*, with 7 guns well mounted, but only commanded by an old *Lascari*, or two.

Bay to the Westward of the Island.

To the Westward of this Channel, there is an excellent harbour against the Westerly winds, with good Soundings: I am informed, that the robbers of *Poorbunder*, and *Gulph* of *Cutch*, come here to wood and water.

At the extremity of this Bay, is an inlet, which, at high water, goes a great way up the Country, but, at low water, is nearly dry.

Diu head.
20° 41'. 42" N

Diu head forms the West side of this Bay, and is the Southern extremity of the Coast, lying in Latitude 20° 41'. 42" North and 1° 45' West of *Vauxe's tomb*. The Land to the Westward is low to the water side, but hilly inland. The soundings are regular near shoar, with a hard bottom. See the Log from 10 to Noon, March 30th.

About 2 miles to the Westward of the *Head*, is the Western extreme of the Survey; and what I have said of this *Coast*, with the *Charts*, *Views*, and *Plans*, is sufficient to give the most perfect idea of it. It is altogether a bold, barren, and inhospitable shoar; with respect to the 1st, the Soundings give little or no warning for the distance off; to the 2nd, trees, and the appearance of herbage, or cultivation, is very rare; and to the 3rd, it is devoid of a good harbour where a ship may \leftrightarrow with safety during a gale of wind.

R

From

From *Diu-Casile* we stood nearly a SWbS Course, till near the Latitude of *Basseen*, then stood in for the Coast, where we met with strong Southerly winds, which obliged us to stand away for *Surat* again. This I was desirous of, as I wished to have another Observation at the bar, to know the rate of the Chronometer, which was then gaining $29''\frac{1}{2}$ $\frac{1}{2}$ day; and, from the swatch off *St. John's*, made $2'\frac{1}{2}$ East Longitude, to where the Ships lye in *Surat roads*. In one day's run there can be little or no error, as it corresponds with other observations.

*Banks in the
Entrance of the
Gulph of Cambay.*

I must now say something concerning the dangerous banks, at the mouth of the *Gulph of Cambay*, which, from the Log, and traverses upon the Chart, I have laid down with some degree of accuracy, correcting every course for the set of tides, and leeway: The continual dangers to which we were exposed in the accomplishment of this work, are only known to ourselves, and to those who have any idea of such an undertaking.

The Easternmost and Southernmost part of that *bank*, *dry at low water*, is in Latitude $20^{\circ} 50'$ North, the Ships in *Surat roads* North 47° East, just perceptible from the deck; To the Westward of this is another, (See the Chart) which runs more to the Southward. Its situation is laid down from the Latitudes, and Longitudes of Chronometer.

Vauxe's

Vauxe's Tomb bearing North 50° East, and the Southernmost ship in *Surat roads* N 87 E then in 9 fathoms had 4 $\frac{1}{2}$, $\frac{2}{3}$ d flood, where at low water there must be only about 3 fathoms. See the Log 29th February.

The head of the *Mallacca bank* is laid down by the Latitude and bearings of the *Tomb* when dry; see the Log 26th February.

The head of the third bank from *Surat*, which the Pilot calls *Goapnat*, is only 18 miles West of *Surat roads* Chronometer; Time taken when upon it, 12th February: This and the *Western bank* join together. The dryest and most dangerous part of *Goapnat bank* is exactly laid down by the bearings of the hills, and Latitude when near it. Within 200 yards of the *dry sand*, at half tide, you have 10 fathoms. This *bank* extends Southward to the Latitude of 20° 40' N° and in this Latitude is the *Southernmost danger* I could find, during the whole of my traverses. The *whole* of these *banks* are joined in *one*, as I did not find any navigable channel between them, neither would it be proper for any vessel to attempt it, but go either on the one side or the other, as the tides are so rapid and irregular in their sets.

Northern Banks.

I am informed, that vessels from *Damooan* stand over due West, even with a flood tide, and clear all dangers.

I have often heard of the banks extending down near the parallel of *St. John's*, and it is thought dangerous to stand

stand much beyond that bank; but, from the various tracks of this survey, I do not think there can be any danger upon the banks to the Southward of *Poneira hill*; it must have been a very small spot to escape my searches.

I have now said enough concerning the Northern Parts from *Bombay*; and here I conclude the description of this years work.